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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/022,834 02/13/98 DEGENDT

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EXAMINER

AHMED, S

ART UNIT

PAPER NUMBER

1746

DATE MAILED:

07/01/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/022,834

Applicant(s)

DEGENDT et al.

Examiner

Shamim Ahmed

Group Art Unit

1746

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

- ☒ Claim(s) 1-50 \_\_\_\_\_ is/are pending in the application.
- Of the above, claim(s) 1-26 \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 27-50 \_\_\_\_\_ is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4,6,7&8
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## DETAILED ACTION

### *Election/Restriction*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-26, drawn to a process using dry gases, classified in class 438, subclass 706.
  - II. Claims 27-50, drawn to a process using liquids, classified in class 438, subclass 745.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation, such as invention I does not require to use liquid and vise versa.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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5. During a telephone conversation with Mr. Amir N. Penn on 6/24/1999 a provisional election was made without traverse to prosecute the invention of Group II, claims 27-50.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-26 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 27-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthews (U.S. Patent No. 5,911,837) in view of Sugihara et al. (U.S. Patent No. 5,705,089) and Stanford et al. (U.S. Patent No. 5,244,000).

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Matthews describes a process for removing organic contaminants from semiconductor wafers by contacting a liquid comprising water and ozone, where in the ozone is diffuses into the deionized water and provides fine bubbles.

Matthews further describes that the bath temperature is maintained at about 1-15°C, which is less than the boiling point of the liquid (col. 6, lines 30-42 and col. 7, lines 16-23).

Matthews also describes that after removal of the organic materials, the wafers are rinsed with fresh deionized water at a higher temperature and depending on the nature of the process chemicals, other rinsing fluids can be used along with deionized water. (col. 7, lines 6-15 and col.12, lines 26-37).

Matthews, additionally describes the introduction of a megasonic agitation of the solution in the tank (col.10, lines 56-59).

Matthews fails to describe addition of an additive into the liquid comprising water and ozone.

However, Sugihara et al. disclose a cleaning fluid for semiconductor substrate, in which a phosphonic acid is added as a chelating agent for removing particulate, such as metal impurities from the substrate.

Sugihara, further describes that this additives can be used as a free acid or as in a form of salt and the amount of the added additive is usually very small compare to the amount of the cleaning fluid (col.3, lines 46-58).

Although, Stanford et al. describe a method for removing organic contaminants in which, liquid can be sprayed (col.9, lines 10-13).

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Stanford et al. Further describe that after the substrate is treated for removal of contaminants, carbon dioxide is added to deionized water, which is applied to rinse or neutralize the treated substrate(col. 7, lines 11-22).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Sugihara and Stanford's teaching into the method for removing contaminants as taught by Matthews for effective cleaning process for semiconductor substrate. By doing so, one could have a substrate, which is free of organic contaminants and as well as metal impurities.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929.

sa

June 29, 1999

  
RANDY GULAKOWSKI  
PRIMARY EXAMINER